CLAIMS

What is claimed is:

1. An apparatus for hot gas blow-forming within a press, said apparatus comprising:

at least one heater plate for mounting to said press, said at least one heater plate being integrally heated;

at least one forming tool mounted to said at least one heater plate, such that said at least one forming tool is separately heated by said at least one heater plate; and

at least one insulation enclosure including a base portion positioned between said at least one heater plate and said press, said at least one insulation enclosure further including a perimeter wall surrounding said at least one heater plate and at least a portion of said at least one forming tool.

2. An apparatus as claimed in claim 1 further comprising:

a second heater plate mounted to said press in opposed relationship to said at least one heater plate, said second heater plate being integrally heated;

a second forming tool mounted to said second heater plate, such that said second forming tool is separately heated by said second heater plate; and

a second insulation enclosure including a base portion positioned between said second heater plate and said press, said second insulation enclosure further including a perimeter wall surrounding said second heater plate and at least a portion of said second forming tool.

3. An apparatus as claimed in claim 2 wherein said apparatus closes together such that a portion of one of said insulation enclosures fits within a portion of the other of said insulation enclosures to define a closed insulation vessel so as to insulate said forming tools from the surrounding environment.

4. An apparatus as claimed in claim 3 further comprising a perimeter seal mounted to one of said insulation enclosures for sealing engagement with the other of said insulation enclosures, wherein said perimeter seal mounts to the side of said one of said insulation enclosures and seals against the top of said other of said insulation enclosures.

5. An apparatus as claimed in claim 1 further comprising at least one load-bearing spacer positioned between said at least one heater plate and said press.

6. An apparatus as claimed in claim 1 wherein said at least one insulation enclosure comprises non-load-bearing insulation.

7. An apparatus as claimed in claim 1 wherein said at least one heater plate is mounted to said press via a platen mounted therebetween and to said press.

8. An apparatus as claimed in claim 1 further comprising a perimeter seal mounted to one of said insulation enclosures for sealing with the other of said insulation enclosures to define a closed and sealed insulation vessel.

9. An apparatus as claimed in claim 1 wherein said at least one heater plate includes electrical resistance heating elements therein.

10. An apparatus as claimed in claim 1 wherein said press and said at least one forming tool are not integrally heated.

11. An apparatus for a hot blow-forming process within a press, said apparatus comprising:

a heated and insulated tool container including:

a tool heater plate adapted for attachment to a platen of said press;

at least one load bearing spacer interposed said tool heater plate and said platen;

an insulation enclosure having:

a base portion interposed said tool heater plate and said platen; and

a perimeter wall portion extending in a substantially perpendicular direction away from said base portion and surrounding said tool heater plate; and

a forming tool mounted to said tool heater plate, such that said forming tool is separately heated by said tool heater plate; and

a second heated and insulated tool container opposed to said heated and insulated tool container, said second heated and insulated tool container including:

a second tool heater plate adapted for attachment to an opposed platen of said press;

at least one load bearing spacer interposed said second tool heater plate and said opposed platen;

a second insulation enclosure having:

a base portion interposed said second tool heater plate and said opposed platen; and

a perimeter wall portion extending in a substantially perpendicular direction away from said base portion and surrounding said second tool heater plate; and

a second forming tool mounted to said second tool heater plate, such that said second forming tool is separately heated by said second tool heater plate;

wherein said forming tools are individually heated by respective said tool heater plates and are insulated from said press, further wherein said apparatus closes together such that a portion of one of said insulation enclosures fits within a portion of the other of said insulation enclosures to define a closed insulation vessel so as to insulate said forming tools from the surrounding environment.

12. An apparatus as claimed in claim 11 further comprising a perimeter seal attached to at least one of said heated and insulated tool containers and adapted for sealing engagement with the other of said heated and insulated tool containers.

13. An apparatus for hot gas blow-forming within a press having a press bed and an opposed press ram, said apparatus comprising:

an integrally heated heater plate mounted to said press bed;

a layer of insulation positioned between said integrally heated heater plate and said press bed;

a second integrally heated heater plate mounted to said press ram;

a second layer of insulation positioned between said second integrally heated heater plate and said press ram;

a forming tool mounted to said integrally heated heater plate, said forming tool being separately heated by said integrally heated heater plate;

a second forming tool mounted to said second integrally heated heater plate, said second forming tool being separately heated by said second integrally heated heater plate; and

at least one insulation enclosure at least partially surrounding at least one of said heater plates and said forming tools so as to insulate said at least one of said heater plates and said forming tools from the outside environment.

14. An apparatus as claimed in claim 13, further comprising a perimeter seal attached to said at least one insulation enclosure.